KOBE UNIVERSITY

Kobe University

The 2nd Kobe University Brussels European Centre Symposium

Building Safer & Resilient Society against Mega Disaster

REPORT FROM JAPAN ON 3.11

The 2nd Kobe University Brussels European Centre Symposium

Preface

The 2nd Kobe University Brussels European Centre Symposium, "Building Safer & Resilient Society against Mega Disaster", was held successively on September 19th 2011 at Vrije Universiteit Brussel with their kind assistance and support. This symposium was held with an intension of disseminating information on the damage and recovery from the 3.11 Great East Japan Earthquake and Tsunami, hereinafter referred to as GEJET, to European academic communities. GEJET has shaken not only Japan but also the global society by illustrating what will happen if we were confronted with a very large scale, compound disaster that the nature can bring. Just a few days earlier, the kick-off symposium of our Brussels European Centre titled "A New Era of Japan-Europe Academic Cooperation" was launched in Brussels from 3rd to 7th of March 2011.

Holding this 2nd symposium, I would like to express my gratitude to all participants to the symposium including His Excellency Ambassador Kojiro Shiojiri, Mission of Japan to the EU, Ms Manuela Soares, Director of Environment Directorate of the European Commission, Ms Paola Albrito, Head of Europe Office of the ISDR of the United Nations and Professor Paul De Knop, Rector of Vrije Universiteit Brussel, who all expressed their concerns for the people in the disaster stricken areas and delivered a strong message for the hope of recovery and reconstruction through human strength and cooperation. I would also like to thank all the speakers who contributed to the better understanding of the disaster and shared with us what happened at the site and what is still going on in the areas.

I hope the symposium produced not only a better understanding of the facts concerning GEJET and its aftermath but also an opportunity to reconsider and search for ways to collaborate together in building a safer and resilient society against disasters.

Fukuda Hideki

FUKUDA Hideki
President of Kobe University

The 2nd Kobe University Brussels European Centre Symposium

Building Safer & Resilient Society against Mega Disaster

- Report from Japan on 3.11 -

Symposium

Date: September 19th, 2011

Venue: Vrije Universiteit Brussel, Campus Etterbeek, Building D

Video Conference

Date: September 20th, 2011

Venue: Vrije Universiteit Brussel, Campus Etterbeek, Building D
Kobe University, Rokkodai Campus, Building GSICS

CONTENTS

All the presentation documents are available at
http://www.office.kobe-u.ac.jp/opie/kubec/presentations/20110919_en.html

Symposium
Building Safer & Resilient Society against Mega Disaster
- Report from Japan on 3.11 -

PROGRAMME

Opening 9:00 - 9:40

Opening Address: Dr Hideki Fukuda, President of Kobe University

Speech: HE Mr Kojiro Shiojiri, Ambassador of Japan to the European Union

Speech: Mrs Manuela Soares, Director of the Environment Directorate, Directorate-General for Research and Innovation, European Commission

Speech: Ms Paola Albrito, Head of Europe Office, UN International Strategy for Disaster Reduction

Speech: Prof Paul De Knop, President of Vrije Universiteit Brussel

Part I: Report on the GEJET 10:00 - 12:00

"Summary on the great East Japan earthquake and tsunami"

Prof Shoichi Yoshioka, Research Center for Urban Safety and Security, Kobe University

"The Behavior of 3.11 Tsunamis in the Sendai Plain and the Damage to the Disaster Prevention System"

Prof Akira Mano, Disaster Control Research Center, Tohoku University

"Present Status of Japanese Nuclear Power Plants and Radiation Disaster"

Prof Keiji Oda, Graduate School of Maritime Sciences, Kobe University

"Damage situations of ground, infrastructures and others"

Prof Yasuo Tanaka, Research Center for Urban Safety and Security, Kobe University

Part II: Impact of the GEJET 13:00 - 15:00

"Waste management toward restoration"

Prof Masanobu Ishikawa, Graduate School of Economics, Kobe University

"A Process of Improvement of Law and Institution in Disaster Management: Lessons from East Japan"

Prof Yuka Kaneko, Graduate School of International Cooperation Studies, Kobe University

"Collaboration for generating Hope"

Prof Masayoshi Morioka, Graduate School of Human Development and Environment, Kobe University

"Community recovery of Tohoku disaster hit area and recovery supports from outside"

Prof Yoshiteru Murosaki, Kwansei Gakuin University, Prof Emeritus of Kobe University

Part III: Panel Discussion 15:30 - 17:40

Chair:

Prof Hiroshi Takeda, Kobe University

Panelists:

Speakers from part I & II and;

Dr Denis Peter, European Commission

Prof Hormoz Modaressi, BRGM

Prof Jochen Zschau, GFZ German Research Centre for Geosciences

Prof David Alexander, Global Risk Forum GRF Davos

Opening Address by **Dr Hideki Fukuda**
President of Kobe University

Dear honorable guests, ladies and gentlemen,
As the President of Kobe University, it is my great pleasure and honour to welcome you to this symposium. Today, we have many distinguished guests in attendance, and I would like to express my sincere gratitude to several particular honourable individuals; His Excellency Ambassador Kojiro Shiojiri, Mission of Japan to the EU, Ms Manuela Soares, Director of Environment Directorate of the European Commission, Ms Paola Albrito, Head of Europe Office of the ISDR of the United Nations and President Paul De Knop, Vrije Universiteit Brussel.

Representatives from such organizations make this symposium a truly international event, and I am very grateful for everyone's participation. This is the second Kobe University Brussels European Centre Symposium, and it follows the first meeting that took place here in Brussels last March.

Today, we are here to discuss a devastating disaster, the Great East Japan Earthquake and Tsunami, GEJET for short, that struck Japan on March 11th, just a few days after our first symposium. As many of you may remember, in the very early morning of January 17th 1995, Kobe City, which is the hometown of our university, was shaken violently by a very strong earthquake. This earthquake, known as "the Kobe Earthquake" resulted in the loss of over 6,400 lives and economic costs of more than 10 trillion yen (900 million euro). We thought, at that time, that it was the greatest natural disaster that Japan had ever faced. However, in the afternoon of March 11th, an even greater catastrophe hit the country.

Residents of Kobe were speechless as we watched the news of this tragedy on television, remembering the sorrow and pain we experienced during the Kobe Earthquake. The connection felt through this emergency was so strong that one NGO group of volunteers in Kobe dispatched a reconnaissance team, which included two Kobe University students, to Miyagi prefecture that very evening. Since that day, numerous similar excursions from Kobe have followed.

The disaster also caused severe damage to universities in the region. One of which was Tohoku University, a leading national university. Today, Prof Mano of Tohoku University is here with us to share their experiences and the current challenges they face in the devastated areas. In order to help the recovery and reconstruction from GEJET, Kobe University has published a list of recommendations for strategic reconstruction plans partly based on lessons from the Kobe Earthquake. Additionally, Kobe University is going to sign a MoU with Tohoku University to support reconstruction of the region with a vision of creating a league of academic alliances in order to implement scientific and cultural knowledge to rebuild and even improve our society.

An academic alliance between two regions such as Tohoku and Kobe in Japan does not allow us to fully apply the comprehensive lessons learned from this disaster and build a safer and more secure global society. Sharing the knowledge of lessons learned from this disaster with global partners is extremely important to implement such academic endeavors. It is our hope that during this Symposium, all participants will take this opportunity to thoroughly discuss what we can learn from this disaster.

I thank you all again for participating in today's Symposium and hope this is the beginning of increased collaboration between the people of Europe and Japan. Thank you very much.

Speech by **HE Mr Kojiro Shiojiri**

Ambassador of Japan to the European Union

Good morning. Distinguished guest, ladies and gentlemen. Last September, the Kobe University Brussels European Centre was opened. It was the first time any Japanese national university established an office in Brussels, the capital of Europe. It is an important landmark in Japan-EU Academic Cooperation. I would like to offer my congratulations to the centre on its first anniversary.

Since the disaster in Japan last March, our people have been struggling very hard to overcome the aftermath. I would like to sincerely express gratitude to our European friends for your strong support.

Several days after the disaster hit, a CNN journalist, making a live broadcast from the affected area in Tohoku, described the scene in front of him. He depicted it as a war between the worst of Mother Nature versus the best of human nature. That war is still continuing. We live to continue to fight and we will never give up.

In a recent policy speech, new Japanese Prime Minister Noda quoted the words of Fukushima high school students, delivered from the bottom of their hearts. "To be born in Fukushima, grow up in Fukushima and work in Fukushima, to get married in Fukushima, have children in Fukushima and bring up those children in Fukushima, to see our grandchildren in Fukushima, to see our great grandchildren in Fukushima and to end our days in Fukushima. That is our dream." Our task is to make those students realize their dream.

I would like to read a piece of haiku, short Japanese poem, which I made myself. EU President Herman Van Rompuy who was also present for the first European Centre symposium is a haiku master. I would like to follow him.

After dark night
Beam of hope
Shines for everyone

I hope this symposium will give a beam of for hope to everyone.

Thank you very much.

Speech by **Mrs Manuela Soares**

Director of the Environment Directorate,
Directorate-General for Research and Innovation,
European Commission

Good morning. Mr Ambassador, Mr President, ladies and gentlemen, I'm very pleased to have been invited to the second symposium of the Kobe University Brussels European Centre and on behalf of the European Commission, I would like to welcome you today in Brussels.

The whole world was shocked by the tragic event of March 2011, but amazed at the bravery of the Japanese people. In this context and on behalf of the European Union, I would like to extend my deepest sympathies to the people and government of Japan. But the time has now come to move forward and develop solutions for disaster preparedness and prevention. And this will require a collective effort from key players, such as scientists, authorities and policy makers and this is also where international cooperation plays an important role.

In this respect, Kobe is certainly a global preference. In January, 2005, ten years after the devastating Kobe earthquake, the United Nation General Assembly convened a world conference on disaster risk reduction in Kobe. The conference took stock of progress made of disaster risk reduction and set up a plan for the next 10 years. The outcome of the UN conference, the Hyogo Declaration and Hyogo Framework for Action 2005 to 2015, shows a commitment from the international community to address disaster risk reduction and to engage in a resulted oriented plan of action. This plan has two priorities; first, to identify assess and monitor disaster risks and enhance early warning systems; and second, to use knowledge, innovation and education to build a culture of safety and resilience at all levels.

The partnership between Europe and Japan is a good example of how research can be improved through international or bilateral cooperation. The last European Union-Japan Summit in May marked the 20th anniversary of summits between the two sides, highlighting the importance of further enhancing the EU-Japan partnership by strengthening science and technology cooperation. The recent Science and Technology Cooperation Agreement, which entered into force on the 29th of March, established measures for a more structured and objective based science and technology cooperation partnership. The first EU-Japan Joint Committee meeting on Scientific and Technological Cooperation held in Tokyo last June, already focused on two important areas of research, renewable energy and critical raw materials.

As the next step, of course, considerable efforts at the global level will need to be made in order to address nuclear safety. But other challenges which we are currently facing include climate change, natural hazards and disaster preparedness as well as prevention. These were highlighted as topics of concern at the EU-Japan May Summit and are addressed in the environmental research programme under the Seventh Framework Program of Research and Development, which I am responsible for.

Cooperation with Japan on climate issues exists for quite some time. The climate change research and science workshop that is co-organised by the Environment Research Programme and the Japan Agency for Marine-Earth Science and Technology takes place every two years. The 6th workshop is due to take place in Brussels on 10th of October. This will be an opportunity for participants to discuss the long and short term impacts of climate change and extreme events. Later on today, my colleague, Dennis Peter, will provide you with an overview of the commission's work on natural hazards. Information on the next call for proposals, which cover the things being discussed here today, will also be made available.

I'd like also to mention that Japanese research institutions and scientists regularly take part in our programmes. Kobe University is a partner in, for instance, one project called "SYNER-G", which looks at seismic vulnerability. The Japan Meteorological Agency is working on a project on early warning systems, "REAKT" project. The examples of these two EU-funded projects will be presented also by the scientists this afternoon. Information exchange and improvements in our scientific research are shared because they are essential for risk management and in supporting awareness and capacity building.

I hope that this event will provide us with a clear understanding of the challenges that still lie ahead. Research in the international context can boost science and improve policy. It will also contribute to sound risk management concepts as well as tools enabling society to become more resilient.

Finally, let me just give you a very brief insight into the new framework programme for research and innovation that we call now Horizon 2020. It has three main objectives. The first is to raise the excellence of the research base needed to generate a higher number of world-class scientific breakthroughs. Strengthen Europe's science base and European research area means among others, reinforcing the whole of European Research Council, promoting planning, preparation and construction of large-scale research infrastructure and equipping the next generation of researchers with innovative skills. The second objective is to boost competiveness and promote innovation by broadening support across the full innovation cycle, including proof of concept, testing, piloting, demonstration. By securing a strong position in key enabling technologies such as ICT, nanotechnology or advanced materials, and also by strengthening industry participation, in particular, small and medium enterprises, and establishing formal, public-private partnerships. The third objective is to tackle societal challenges by contributing to the use of visions, policy objectives in areas such as climate change, resource deficiency, healthy aging and energy transport among others, and also engaging citizens as well as civil society in the research and innovation chain. The multi-annual financial framework recently presented by the Commission shows that investment in the research and innovation will be significantly increased for the period 2014 to 2020. Horizon 2020, with its proposed budget of 80 billion euro, intends to boost Europe's global competitiveness and help create jobs for the future. International cooperation will play a central role in its implementation. And disaster risk reduction, addressed from different perspectives, will certainly find support within this research effort, creating results which will be of direct benefit to our society.

Thank you very much for your attention and I wish you a very productive meeting.

Speech by **Ms Paola Albrito**

Head of Europe Office, UN International Strategy for Disaster Reduction

Good morning, ladies and gentlemen. It is a great pleasure to be here today, representing the United Nations International Strategy for Disaster Reduction. I would like to congratulate Kobe University for organising and hosting this important event.

From the second half of 2009 to the first half of 2010, 285 disasters killed and affected more than 158 million people, claimed 232 thousand lives, and caused U.S. dollars 51.4 billion of economic damages. These were the numbers before the greatest Japan earthquake, the earthquake in Christchurch, New Zealand and the flood in Australia. What are some of the facts? Disasters cause vulnerability to natural hazards, kill more people in developing than in developed countries, and more poor people in rich countries. But the Global Assessment Report on Disaster Risk Reduction for 2011, it shares some positive findings in this regard. Globally, mortality risk of floods and tropical cyclones is now going to be down. Why? Because vulnerability reduction has been affected. For example, mortality rate from tropical cyclones in East Asia and the Pacific, which concentrates about 44 percent of the people exposed per

year, is now 50 percent lower than in 1980, in absolute terms, and a third lower per capita.

Early warning systems save life. In Japan, a number of media demonstrated that more than 90 percent of the total population of the inundated area evacuated successfully. Thanks to the mixture of measures of drills and awareness activities combined with issues of early warning. Vulnerability to hazards is very high and rapid increasing in the developed country, with adverse impact on their economy. Again, the Global Assessment Report 2011 points out that economic loss risk is continuing to increase, particularly in wealthier countries. In 2010, the economic loss risk to floods in the OECD, which concentrates about 53 percent of the global GDP expose per year, is about 170 percent more than in 1990. Economic loss risk in the OECD is rising faster than GDP per capita. Meaning, that the risk of losing wealth in weather related disasters is increasing faster than the wealth that is being created.

Disaster risk has become an acute and increasing urban problem. Poorly planned urban environments, weak urban governance and old and aging and fragile physical infrastructure and gaps in the basic services, including rapid urban growth, have increased pressure on the urban environment and thus, also exposure to disaster risks.

Cities today, are major agents of economic opportunity, education and cultural life. 100 cities today are in control of 30 percent of the world economy. The need for maintenance and upkeep of the city are crucial safety measure for the citizens. In Japan, the majority of buildings were proved as earthquake resilient, so that only a few people were fatally trapped under fallen buildings.

Disaster risk reduction is not only a concern of state and local governments, but also every citizen concerns and responsibility. Lives and livelihood can be saved when disaster risk reduction is made a priority at the local level, at the national, and at the international level. Reality is that without proper risk reduction awareness or policies and measure in place by national and local governments, and with more population settling in exposed and high-risk areas and climate change expected to further increase our exposure, we are poisoned for disasters that will increasingly affect sustainability and development gains around the world in the coming years and decades.

The Fukushima situation has generated debate and reflection on safety in regards to nuclear power. Some countries are re-examining their preferences and policy on energy sources in response to the events in Japan. The international community is a key role in leading calls for countries to reassess all critical facilities, especially nuclear power plants, against large scale hazards, and to revise or scale up assumptions within their disaster management plans. In Japan, with its high level infrastructure standards and preparedness could not withstand major disasters. Other parts of the world could equally be as vulnerable, if not more, to similar or worse disasters.

Advancing in addressing vulnerability to disasters requires a hand-in-hand approach between scientific community, education and decision makers. The priority three of the Hyogo Framework for Action adopted in Kobe in Japan in 2005 as an outcome of the world conference dedicated to this topic, points out some key activities to ensure the scientific advances are integrated in educational efforts and in addressing informed decision. Last week, UNISDR and the European Commission Directorate-General for Research and Innovation, and EUR-OPA Major Hazards Agreement of the Council of Europe, organized a workshop which aims to promote dialogue between the scientific and policy makers community towards more effective measures to adopt a climate through G and R. This dialogue needs to continue if we want to reduce people risk.

Japan in this context, is regarded as a role model with high investments in disaster risk management and risk reduction. The destruction and death toll would have been worse had Japan not fostered a culture of preparedness accompanied by risk reduction choices. The Kobe University contributes in moving forward this knowledge, and their presence in Brussels represents an extension of education and knowledge in the field of risk reduction. UNISDR collaborates with Kobe University in the context of an overall partnership between UNISDR and Japan, further enhanced by the presence of our UNISDR sub-regional office in Kobe. The city is equally hosting the International Global Platform of the International Strategy for Disaster Reduction. Following the Great East Japan Earthquake, the platform has established an expert group meeting called Towards Greater Reconstruction from Great East Japan Earthquake, with chance to provide valuable advice based on experiences gained from large scale disasters in the world to Japanese experts working for recovery and reconstruction in Japan. And to gain precious lessons from this painful disaster experience in Japan and to make them useful for disaster risk reduction in other countries.

Finally, I would like to congratulate Japan that has announced the intention to host the next World Conference on Disaster Risk Reduction that will take place in 2015. I look forward to continuing our collaboration and I wish this symposium a very productive outcome. Thank you.

Speech by **Prof Paul De Knop**
President of Vrije Universiteit Brussel

Dear Mr President, dear Ambassador, Mrs Soares and Mrs Albrito, dear colleagues, ladies and gentlemen, dear students, on behalf of the Vrije Universiteit Brussel, I welcome you all at our university. We are very honoured to have the esteemed representatives of Kobe University, as well as the Japanese Ambassador to the EU and important representatives of the European Commission as our guests today.

On top of that, I'm very pleased that Kobe University has chosen our university as the location for its university symposium. The VUB is an excellent choice for a symposium that will try to improve the mutual understanding about the earthquake and tsunami between the EU and Japan.

Today, you're in the auditorium of hope, the auditorium of the future, since it's our room where all the PhDs are defended. May this room also be for you a guarantee for success.

When we refer to Brussels, we often call it the "Capital of Europe". This city has a long history of hosting the institutions of the European Union within its European Quarter, the headquarters of the NATO, and many other national and international institutions and companies. And in the middle, between all these important organizations, the Vrije Universiteit Brussel is located on two parkland campuses. So, we can literally say that we have the world at our doorstep. We consider this unique position in Brussels a major opportunity.

Nowadays, major global trends require the universities to take up new responsibilities. One of them is that, due to the effects of globalization, universities have the responsibility to educate students to global citizens.

Two years ago, I proposed the university an overall strategic plan for the period 2009 to 2012. One of the strategic entities of this plan was becoming a real international university. Today, this strategic entity is getting shape. The Brussels University Alliance, and initiative of our French-speaking sister university, ULB and VUB to join forces to enhance the international profile of Brussels. It's a new step in the international ambitions of the VUB. With it, the Brussels universities aim at achieving a greater international visibility and impact through developing high international quality standards and through using European and international dimension of Brussels. The support of the second Kobe University Symposium in Brussels by VUB and ULB, is just one of the many manifestations of this new enhanced collaboration. But we do more than just that. On a larger scale, we will focus on an increase of the internationalization of the education. In order to attract international talent, the Vrije Universiteit Brussel will offer a sufficient number of English taught programs, exceeding the present number. We will also conduct intensive promotion of incoming and outgoing mobility of students, researchers and staff. And one of the things I hope even to realize is to set up an international student hotel on campus. We believe that the intake of international students, researchers and staff contributes to a dynamic exchange of knowledge and skills. And where else can you achieve this better than in Brussels, a city with such a wide variety of people and cultures. That is why we also stimulate our own students, researchers and staff to engage in mobility, to provide them with competences that better qualify them to work in a globalizing world. As a result, internationalization will form an important part of the new strategic plan I will present to my Board of Governance, strategic plan for the years 2012 to 2016.

Ladies and gentlemen, I am a firm believer that stronger collaborations between academic institutions in Europe and in Asia, and specifically Japan, can contribute to a better mutual understanding. That is why I am very pleased that it's a compliment to do a symposium. Kobe University offers a half-day interactive workshop for students in Belgium and in Japan through teleconferencing. Prior to the video conference session, students in Belgium will be provided with testimonials of field observations from their Japanese counterparts in the region of the Great East Japan Earthquake and Tsunami. The images of the devastating tsunami have shocked us all. And although we already saw many images of the destructive forces of nature on television, in the newspapers or on the internet; there are many stories yet to be told. A better understanding of the impact of these large scale events is, indeed, necessary. New media and technologies provide us with all kinds of possibilities there. Let us use them for the best.

Ladies and gentlemen, dear colleagues, let me conclude by wishing you all a very inspiring symposium. I'm sure that Brussels and our VUB campus will offer you a very stimulating environment to make it a remarkable symposium. Thank you very much.

PartⅠ: Report on the GEJET 10:00 - 12:00

“Summary on the great East Japan earthquake and tsunami”
Prof Shoichi Yoshioka, Research Center for Urban Safety and Security, Kobe University

“The Behavior of 3.11 Tsunamis in the Sendai Plain and the Damage to the Disaster Prevention System”
Prof Akira Mano, Disaster Control Research Center, Tohoku University

“Present Status of Japanese Nuclear Power Plants and Radiation Disaster”
Prof Keiji Oda, Graduate School of Maritime Sciences, Kobe University

“Damage situations of ground, infrastructures and others”
Prof Yasuo Tanaka, Research Center for Urban Safety and Security, Kobe University

“Summary on the great East Japan earthquake and tsunami”

Prof Shoichi Yoshioka, Research Center for Urban Safety and Security, Kobe University

On March 11th 2011, the large earthquake and tsunami hit Tohoku region, northeast Japan. The Magnitude of the earthquake was 9.0, which is the fourth largest trench-type earthquake ever recorded in the world. The hypocentre was just off the coast of the Tohoku region and the depth was about 24 km. The earthquake fractured the plate boundary there, approximately 450 km in the north-south direction and 200 km in the east-west direction on the inclined plate boundary.

In Japan, large trench-type earthquakes tend to occur, for the Japanese islands are located where four different plates meet together. The oceanic Pacific plate is gradually subducting beneath the continental North American platewith a velocity of several centimeter per year. Last March, the continental plate released accumulated strain abruptly, causing the earthquake and tsunami in northeast Japan. The magnitude 7.3 Sanriku-oki earthquake, which occurred just two days before the Great East Japan earthquake, is considered to be its foreshock. Numerous aftershocks were also observed, including three major earthquakes with magnitude greater than 7.0 occurred in this region within one hour after the main shock.

The earthquake caused the crustal deformation in the Tohoku region. According to the data obtained at GPS stations, Tohoku region moved eastward about 5.3 m and subsided about 1.2 m. The crustal deformation can still be continued.

One of the characteristics of the Great East Japan earthquake is the damage caused by tsunami. A wave of more than 15 m high was recorded in various places along the east coast of Tohoku region.

Last April I visited some areas in the Tohoku region to survey

the tsunami height and to investigate its behaviour in the V-shaped bays. One area in Miyako City, where a large tsunami levee had been constructed, was entirely damaged and other area in Rikuzen-takata City, one of the most seriously damaged cities, everything was washed away. At Ryori Bay, which is a bay with small aspect ratio, the height of tsunami wave was amplified 1.3 to 1.9 times the size at the bottom of the bays. On the other hand at Hirota Bay, which is a bay with large aspect ratio, the amplification of tsunami was not found between the mouse and bottom of the bay. As a result of the survey, the damage caused by tsunami last March is considered to be depending on the shape of the bay.

"The Behavior of 3.11 Tsunamis in the Sendai Plain and the Damage to the Disaster Prevention System"

Prof Akira Mano, Disaster Control Research Center, Tohoku University

The coast affected by the tsunami is categorized into three parts, Sanriku Coast, Sendai Bay Coast, and Joban Coast. Sanriku Coast, a cliff coast in the north, is uplifting so tsunamis are amplified by collision. In the submerging south part of the coast, tsunamis are amplified by energy concentration and bay water resonance. In this area people had frequently tsunami attacks, especially in 1896 there were around ten to 25 metres high tsunamis.

In the Sendai Bay Coast, where a long, sandy beach and shallow water in the sea, tsunami propagation was very slow, resulting in some energy dissipation crossing the bay. Very low frequency in large tsunami is the greatest characteristic of this area. Joban Coast has similar characteristic. In a recent research a geologist found very old tsunami traces in 1869, Joban Tsunami, whose magnitude was about the same as that of 2011.

The Tsunami last march destroyed over 100,000 houses and killed around 20,000 people, although tsunami reached these areas about one hour after the main shock. Why couldn't people escape from tsunami before it reached them? One reason for the delay of evacuation is explained by the tsunami warning underestimate. The Japan Meteorological Agency (JMA) issued its first large tsunami warning just three minutes after the main shock, the estimated wave height is however, three metres in Iwate Prefecture, six metres in Miyagi Prefecture, and three metres in Fukushima Prefecture. They are too low compared with the actual tsunami height, and even lower than the levee height, so that the first warning gave some kind of relief to people. After 30 minutes, the JMA revised the warning that tsunami is much higher than estimated.

People however couldn't get the revised information, because of the blackout. So many aftershocks caused serious damages to the electricity facilities, for example televisions, and hazard information transfer systems, so that people were shut down from the information. In addition, traffic signals were widely stopped, it caused traffic jam and many cars on the road were washed away by the tsunami. And the blackout also caused the meltdown in the nuclear power plant in Fukushima.

There was historically a very good mitigation system along the Sendai Bay Coast composed of sandy beach, and coastal channels, forests, and levees, even though urban growth may have added vulnerability by clearing away some of the coastal forests. Reconstruction of robust levees requires restoration of broad beaches, and control of the return flow concentration through the development of coastal channels and forests.

“Present Status of Japanese Nuclear Power Plants and Radiation Disaster”

Prof Keiji Oda, Graduate School of Maritime Sciences, Kobe University

There are 17 nuclear power stations and 54 plants in Japan. Five stations are facing the Pacific Ocean and there are six units in Fukushima. In a steady operation, efficient products of radioactive materials are normally contained by pellet in the rod, which is the fundamental unit of nuclear fuel, and the pressure vessel of about 16 centimetres thick steel, and the containment vessel of about one metre concrete in the reactor building. In addition, all the plant stations facing the Pacific Ocean were constructed on the higher ground than the expected height of tsunami. Actually, the three units were operating at the moment of the huge earthquake, and all of them were successfully stopped. No additional fission energy was produced after scram. About 40 minutes later, however, the 15 metre high tsunami, much higher than expected, destroyed everything needed for cooling system, leading to the heartbreaking accident of meltdown.

In the reactors number 1, 2, 3, the temperature of the fuel rose and increased up to 1,000 degrees as a result of loss of cooling system. At such a high temperature, the metal reacts chemically with the pressurized water, producing hydrogen gas. This very light gas permeated through the small gap of metal and accumulated in the upper area of the reactor building. It was a matter of time before the hydrogen explosion releasing some of the light radioactive materials, such as iodine and cesium into the air. As a radiation protective action, the Japanese government decided to take action according to the guideline of IAEA, and restricted people from entering the area within 20 kilometres from the nuclear power station. The evacuation area was also established after referring to the estimated radiation map. Decontamination work will continue in this area for several years or tens of years. By this nuclear accident, Japan received much radioactive exposure. However, to avoid meaningless panic and rumor, I want the people of Japan and the world to understand several scientific facts. The first is the existing of natural radiation as essential element in all living bodies, with an activity of 7,000 becquerel. The second is that living cells have the inherent ability of repairing DNA damages. Every day almost all damages to the cell are repaired. And third, the most reliable data, delivered from long-term investigation against atomic bomb survivors, more than 100,000 people in Hiroshima and Nagasaki, shows that there is no effect on embryo and fetus under 100 millisievert. Over 300 millisievert, cancer risk increases significantly, but about 30 percents of cancer death are caused naturally by other reasons. So, we don’t need to be anxious, even for children.

“Damage situations of ground, infrastructures and others”

Prof Yasuo Tanaka, Research Center for Urban Safety and Security, Kobe University

Last March the earthquake and tsunami hit super widespread areas in East Japan. The Great East Japan Earthquake and Tsunami (GEJET) caused large human casualties as well as wide physical damages to houses, public buildings, and infrastructure such as roads, railways, water, electricity and gases, compared with even the Kobe Earthquake in 1995, which is the largest one until 2011. The amount of the economic loss in Kobe is 10 trillion yen, two percent of GDP at that time, but this time it is estimated around 17 trillion yen, 3.5 percent of GDP. The number of collapsed houses is similar, 104,906 against 112,528, but the victims are quite different. The Kobe Earthquake killed 6,434 people and 83.3 percent of them died due to collapsed houses. This time, as of September 6th, on the other hand, 15,769 people are killed and 4,227 are missing and 92.4 percent of them are drowned because of tsunami. Infrastructural damages are also more serious, for instance, electricity, gas and water are not provided to the 2-3 times more houses than in case of Kobe. The highest intensity 7 of ground motion is observed in the both disasters, but the predominant frequency of shaking is very different. In Iwate Prefecture, the northern part of Tohoku region, the first phase of shaking is really strong, in Miyagi Prefecture, south to the Iwate, there are two strong phases, and in Fukushima, where nuclear plants are, the second phase is larger. And further south, there is only one phase of shaking. These different patterns of strong motion combined with ground condition of each area caused various types of ground failure, for instance, extensive liquefactions and subsequent differential settlements in Urayasu, road embankment failure in Hitachi-Naka Port, natural slope in Shirakawa, earth fill dam in Fujiwara and so on.

The GEJET is a super wide area disaster and its effect is compound or cascading. As a result, the recovery is much complicated and takes longer. However, we are now going into the reconstruction stage. Our task is to how to derive a solution and implement DRR for such compound disaster. A recommendation report “Towards Reconstruction - Hope beyond the Disaster” presented by the Reconstruction Design Council on June 25th, says that towards reconstruction, key solution is how to bridge and link the people, communities, regions, and countries.

"Waste management toward restoration"

Prof Masanobu Ishikawa, Graduate School of Economics, Kobe University

My presentation will be about the GEJET waste management problems, lessons we learned from them and some new proposals to help.

Most disaster waste can be classified into five groups; 1) unwanted articles from damaged houses, 2) waste from damaged houses and dismantling, 3) everyday waste from refugee life, 4) damaged infrastructures and 5) waste from damaged natural objects. However, disaster waste of GEJET has the following four features: 1) Contamination by radioactivity, 2) Tsunami waste which contained sea sediment, 3) Swept away waste in the sea, and 4) Contamination by seawater. The estimation of the sea sediment transferred by the tsunami is 33.6 to 48.4 million tons in total which means that the volume of GEJET waste is almost equal to the volume of annual urban waste generation in Japan (50 million tons). However, if you add urban waste generation and industrial waste generation, it is about 450 million ton, which means GEJET produced one-tenth of the total volume of waste in a night. Compared to Hanshin/Awaji Earthquake, which generated 14.3 million tons, GEJET generated four times as much volume of waste.

The Ministry of the Environment (MOE) announced the roles to be played by the state, prefectural and the municipal governments. According to the MOE, the state government is to develop the master plan. The prefectural government is to provide general coordination and the development of an action plan. The municipality is to put the action plan in operation.

The fundamental policy of waste processing in GEJET waste is on-site primary sorting. Secondary sorting is also necessary at temporary stock yard to look for any recyclable item and use rubbles as construction. Everything had to be in accordance of the recycling law. In respect to the necessity of the regional waste processing, some bigger joint instillation

plant and joint collection plant were installed and the processing of waste was treated by categories.
In addition to all of the above, there is a new approach taken from the Chinese policy for Sichuan Great Earthquake. It is the extended associations of prefectures and cities in the Kansai area to support an assigned Tohoku prefecture. Although the support offered is great, there are still the problems of extremely large quantity of waste (general and radioactive), decontamination of soil and the urgent needs for restoration. GEJET waste management taught us to anticipate the "unanticipated damage", the importance of risk communication and ex-ante partnership. With these in mind, I would like to make two proposals. One is to organize a stakeholder dialog and civic panel for management of radioactive waste and the other is to develop a triangle partnership between cities for mutual support in case of emergency. A three-city bound partnership with people moving around to learn how the city is organized and what to do in case of emergency.

"A Process of Improvement of Law and Institution in Disaster Management: Lessons from East Japan"

Prof Yuka Kaneko, Graduate School of International Cooperation Studies, Kobe University

The purpose of my presentation is to understand the needs for and observing the process of legal changes toward better disaster response. The method used for research was through field work and interview with the victims in one of the disaster areas, Iwate Prefecture.

Before we talk about changing the disaster law, we must understand that there are many factors contributing to the establishment of laws for such disasters. For example, tsunami brings about a totally different issue to consider from that of Hanshin/Awaji earthquake. We need to comprehend the historical changes of social needs for government's response and the occasional change of philosophy toward disasters.
In regard to the law for emergency rescue and the very early stage of emergency response of the government, there have been repeated improvements made to the basic disaster law established in 1961, especially after the Hanshin/Awaji earthquake. These improvements have brought about relatively good achievements such as horizontal assistance by other local government, concentration of commands to the cabinet, encouragement of volunteer and other citizens' initiatives, broader initiative of Self-Defense Force, and National government acted quickly to assure full budgetary support.
In regard to the assistance to disaster victims, the 1947 law for disaster assistance constitutes the legal basis, which has been developed and improved especially after Hanshin/Awaji earthquake for monetary aids to victims who lost housing. However, there is a great shortage of assistance, particularly for those who lost the bases of livelihood. This is because the current law is set up to only help those who lost the minimum basis of living and prohibits aid to private properties.
In the reconstruction phase, both prefectural and municipality governments have limitations on the expenditure and institutional constraint because of the half-finished decentralization and the lack of basic law on post-disaster reconstruction. They are unable to make fiscal reconstruction planning in fear of the last moment budgetary cut by the national government.
The local government has three major choices of reconstruction plan; 1) the relocating to high grounds, 2) strengthening of lower grounds and 3) strengthening of individual building. The national government may be favoring the last one, possibly because it is the lowest cost of the three, in their campaign for the new philosophy of disaster mitigation. As illustrated above, local government officials are frustrated to be sandwiched between the national government and the call for help from disaster victims. It is clear that there is an urgent need for a fundamental change in the local autonomies.
The example of Yamada Town in Iwate Prefecture shows a chance of direct democracy of local government in producing a positive result for the reconstruction planning. Although reconstruction is still only half finished, this challenge

ultimately would achieve not just a reconstruction of hard infrastructure but also a construction of a totally new social institutional infrastructure. Only then will they be able to realize the real local autonomy based on the individual unique kind of democracy.

"Collaboration for generating Hope"

Prof Masayoshi Morioka, Graduate School of Human Development and Environment, Kobe University

The importance and application of the multiple forms of psychological support are explained in this presentation by introducing some cases of IASC(Inter-Agency Standing Committee)in WHO Guidelines.

There are three elements to achieve multiple forms of psychological support. The first is centered on the living person, psychosocial support has to be oriented toward recovering their sense of agency. Therefore having company is always an essential element for recovery. Secondly, a system of mutual aid is necessary for supporters to share their experiences. Thirdly, indigenous cultural resources are important for healing and we look for ways to care for people within their local community.

Professional psychologist worked quickly to provide organized social support in the disaster area. However, there is uncertainty about how we can be sure to establish important links with affected people when we leave the disaster area. Mental care is especially contingent on multiple layers of actual practice and it is an outcome through joint action with the affected persons. We must keep our attention on supporting the disaster victims' personal level of difficulty by listening sincerely to their stories of what they experienced and/or still continue to experience. From this point of view, we decided to provide a predictably-effective practice of "ashiyu", which means "foot-bath" or the soaking of feet in warm water. It will relax both parties and is a good way to create natural conversation.

The support of psychological first aid means being beside the person and the warmth of another person is the first aid for mental care. This is regarded as the best form of support in the case of emergency. According to personal documentation, people's emotion seemed to seriously swing between the negative and the positive for a few months after the disaster. However, after three months had passed, their voices seemed to withdraw within themselves. This is the moment that mental care becomes necessary. Other documentation also shows the importance of the natural power for self-recovery and inter-relationship.

Psychosocial care is also necessary for supporters themselves. Sharing experience is very important to maintain a healthy mental state, therefore volunteers are given a chance to share and reflect on their experience in meetings with other volunteers after each activity.

The third elements for successful care are cultures and local factors. Mental and psychosocial care is provided within the cultural life setting. Hence, the person and community cannot be divided and we make it a point to care for individualism with "his" or "her" community. We also need to recognize the creative healing power of culture. Many collaborative approaches to psychosocial support are ongoing, in a form of creating *tanka* and *haiku*, which are short forms of Japanese poetry. Taking action and sharing with group have important meaning for psychosocial care.

Our hope is generated from the action of personal agency and the root of our hope is human connection. We have to reconstruct our society in terms of person centeredness and we can transform the model of psychosocial support from an individual pathology model to a collaborative, connecting and community model.

"Community recovery of Tohoku disaster hit area and recovery supports from outside"

Prof Yoshiteru Murosaki, Kwansei Gakuin University

I would like to talk about the current stage and problems of the recovery in the Tohoku disaster areas. Firstly, I will talk about the characteristics of the damage from the viewpoint of the recovery. It can be explained from two aspects: one is to capture the side of destruction and the other is to capture from the side of loss. Regarding destruction, I will classify it into "Wide" and "Compound". "Wide" indicates the area affected by GEJET, which is ten times that of the Hanshin/Awaji Earthquake in 1995. The area affected by GEJET is too wide and too many shelters for volunteers to help out at. "Compound" means various disasters occurred close to the same time like a chain reaction. As a result, response to the nuclear disaster neglected the response to the tsunami disaster. In terms of the characteristics of the loss, problems are summarized into the following two points; "Bankruptcy" and "Function paralysis". Victims lost not only buildings and property, but also their job and the land where they lived because of radioactivity and subsidence. Furthermore, the local government was paralyzed as well for many officials also died and the support from the state government was insufficient. Secondary, the support from outside should be mentioned. There are two aspects for needs in this disaster. First is the need for relief and second is the matching of need and supply. After the GEJET occurred, the largest support in the history was carried out from outside. Almost ten times that of the Hanshin/Awaji Parthquake. However, this was not sufficient because of the serious blanks. The "one week blank" and "one month blank". The one week blank was the "blank of the thing" such as medicine and water, satellite and mobile phones which are necessary to life. The "one month blank" was the "blank of volunteers" which was brought on by the lack of information, since telephone line was not usable and the lack of gasoline made it impossible to travel by cars. The blank of volunteers was also caused by rumors that the disaster area was still dangerous or victims did not desire volunteers. Thirdly, I will briefly explain the recovery process. There are three stages of community recovery; the first is quick recovery, or the stage of the refuge; next is the short-term recovery, or the stage of the temporary housing; and the third is long-term recovery, or the stage of the permanent residence. Six months have passed and 100,000 households are now living in temporary houses. However, many people are still staying at shelters and others in their damaged houses where hazardous sludge still remains. The reconstruction plan for the permanent residence is to build housings on the high land while fishing or other work areas remain by the coast. The plan is to build a large supermarket, hospital and other facilities in between the two. I am against this plan for it will destroy the sense of community. I believe houses should be located near the work place. Finally, I would like to close my presentation with the following eight principles for recovery: 1) Solve social distortion such as problems regarding the aged society and medical depopulation; 2) Solve problems comprehensively, do not consider only safety but also convenience and comfort; 3) The recovery plan should include each individual's hope and dreams; 4) Support should ultimately encourage independence; 5) Aim for environmental symbiosis with nature; 6) Value the memory of the area's history and traditional culture; 7) Emphasize industrial reproduction and community business; 8) Continuation of the community by staying connected.

Part Ⅲ : Panel Discussion 15:30 - 17:40

Chair:

Prof Hiroshi Takeda, Executive Vice President, Kobe University

Panelists:

Speakers from part I & II and;

Dr Denis Peter, European Commission

Prof Hormoz Modaressi, BRGM

Prof Jochen Zschau, GFZ German Research Centre for Geosciences

Prof David Alexander, Global Risk Forum GRF Davos

Part 3 looked into the aspects and initiatives taken by the European institutions followed by a panel session among Japanese and European specialists. Professor Hiroshi Takeda, Executive Vice President of Kobe University chaired this session. The former part was an individual presentation on each initiative by the respective institutions.

Dr Denis Peter from the European Commission presented an overview of their activities related to natural hazards/disasters in three parts:

1. Policy context

The role of the European Commission in the disaster policy is more coordination or stimulating cooperation between the member states and the agencies both at the international level and European level.

2. Research dimension

A description and breakdown of the Seventh Framework Programme for Research and Technological Development or FP7, which is a seven-year (2007-2013) research programme in Europe. The objectives of FP7 are grouped into the four instruments: 1) COOPERATION, the highest budgeted programme, is for collaboration between certain number of research institutions, universities and enterprises on projects including those in the field of natural hazards; 2) IDEAS is for

new frontier research; 3) PEOPLE is best known for the Marie Curie Actions, a fellowship programme for post doc in a form of training networks; and 4) CAPACITIES is a programme to optimize the use and development of the best research infrastructures in Europe. In addition to those four instruments, the Commission also has Joint Research Centers (JRC) to conduct nuclear and non-nuclear research activities, as well as the European Atomic Energy Community (Euratom) to coordinate the Member States' research programmes for the peaceful use of nuclear energy.

3. Research related and pre-operational

The Commission intends to respond to emergency situations in the European capacity through "Global Monitoring for Environment and Security (GMES) Emergency Response Service". It has developed a common web-based platform "Global disaster and alert coordination system (GDACS) with UN to quickly estimate hazards and give alerts through the joint research centre "Ispra".

Professor Hormoz Modaressi of BRGM, France, presented the scientific perspectives following the GEJET in which BRGM is involved. Examples included two recent collaboration with Japan on Tohoku earthquake, the ONAMAZU and DYNTOHOKU; and SYNER-G (Systemic Seismic Vulnerability and Risk Analysis for Buildings, Lifeline Networks and Infrastructures Safety Gain), one of the FP7 research projects in which Kobe University is one of its 14 participants from 11 countries.

ONAMAZU is the quantitative assessment of nonlinear soil response during the 2011 Tohoku earthquake and DYNTOHOKU is its dynamics from long term stress accumulation to asperities. SYNER-G focuses on systemic vulnerability, like those which occurred in Japan. There are 3 main objectives for this project. The first is to select the most advanced fragility functions to assess the physical and societal-economic vulnerability of all assets, improving and further developing new ones where necessary, considering European distinctive features of the buildings, which are different from countries. The second point is to develop a unified methodology to assess vulnerability at different levels. And finally, to build an appropriate open source software and tool that would be made available to scientific and other communities, if they wish to use it or implement it for different purposes.

Professor Jochen Zschau of GFZ German Research Centre for Geosciences first explained the activities of the centre which focuses its research on earth system dynamics. The centre is conducting a number of projects including its Earth Systems Analysis, SAFER (Seismic Early Warning for Europe), MATRIX (Multi-Hazard and Multi-Risk Assessment Methods) and REAKT (Real-Time Earthquake Risk Reduction) for FP7.

Another project, the Global Earthquake Model (GEM) is a public/private partnership for mapping and communicating complex earthquake risk globally, an OECD initiative which now involves governments, industry, science organizations and institutions, World Bank, ISDR and UNESCO. Japan's membership is currently being negotiated. Professor Zschau pointed out in the last part of his presentation that it is not enough to just quantify risk hazard and risk; there is also a need to quantify the changes of hazard and risk, because vulnerability is a very dynamic quantity. He also stated that there is a need to update risk quickly. Classical risk assessment methods would take years, GFZ is developing a method that combines satellite, remote sensing tools, with ground based panoramic street view with mobile 3-D cameras, similar to the system used by Google.

Professor David Alexander of Global Risk Forum (GRF) Davos started with an overview of his organization. GRF is an organization founded in 2008 which is funded by a variety of sources including the Swiss federal, cantonal and local government, private sector and others. GRF has a network of collaboration with a dozen UN organizations, 40 international organizations and many academic and research institutions around the world. GRF is based upon three pillars: The International Disaster and Risk Conferences (IDRC) and Workshops; Risk Academy; and Planet@risk.

IDRC is a biennial conference on disaster and risk reduction and climate change adaption that is complemented with regional conferences and workshops in the intervening year. There have been three IDRC conferences held so far, and the next will be held in August, 2012. The Risk Academy is the knowledge sharing and know-how transfer pillar of GRF. A think tank is organized within Risk Academy to exchange knowledge and information, and also to launch teaching and research initiatives in the study of disasters, risk and climate change. There are four aspects to it. 1) The raising of awareness, which is done in a variety of ways through discussions, films, exhibitions, etc.; 2) Education such as training courses, workshops and publication; 3) Service & Products, which include regular updates on global risk and editing books; 4) Research & Development, which include project development on integrated risk management.The third pillar, Planet@risk is a web-based networking platform which is used to showcase some of the best non-academic or sub-academic literature. These are specifically useful to stakeholders who deal directly with risk and disaster problems.

Prof. Takeda, the chairman, has started the second part of Panel session by inviting panelists to comment on the two aspects of GEJET; the damage states and the effects of the damage. Panelists have given various comments on these points and the conclusions may be summarized as follows:

-Hazard assessment: One of the most important lessons learnt from this tragic event is how to prepare for the most improbable case. Prehistoric information is also very important. Obtaining information about the areas previously visited and investigated by researchers; we should do more research on the lack of utilization of research, or on how to better utilize research.

-Government involvement: The government of Japan provide hazard map to the public to promote preparedness and prevention. Politics plays an important role here; therefore the map should be politically explainable and most likely to be realized. As for the EU, basically land management policy is in the hands of the member states, however there was a document released last year for risk assessment and mapping guidelines for risk management. This document is not something meant to impose on member states, but is intended to provide them with guidelines and to help them. An example can be the hazard map that was prepared by a municipality in Tohoku area after GEJET, which was very accurate because it incorporated scientific knowledge in the administrative planning. However, the problem was that the disaster reduction plan was not adequately incorporated in the city planning, which might be due to the difficulty of incorporating it into the long-term city planning. One way to solve this problem may be to build a true sense of local autonomy. On the other hand, regulations are normally for life duration and we cannot change the hazard map every year. Hence, the flexibility, transferability and adaptability are indeed needed to be included at the very beginning of the planning.

-Communication: Communication is also a very important aspect that we learnt from GEJET. People are the ones who receive the information, and to whom the governments and scientists should communicate to prepare for the safety. Before the Kobe Earthquake, many scientists talked to the government only about the safety, not to the citizens. This communication process is not a very good style, and we scientists have to change our attitude from this bad style to communicating better to the citizens.

Video Conference 10:00 - 12:00 (Brussels), 17:00 - 19:00 (Kobe)
"Volunteer activities for the GEJET"

Programme

Opening
Prof Hiromasa Kubo, Graduate School of Economics, Kobe University

Presentation:
Ms Ai Yonemitsu, Graduate School of International Cooperation Studies, Kobe University
Ms Mari Kinkawa, Graduate School of Health Sciences, Kobe University
Ms Yuko Sato, Faculty of Maritime Sciences, Kobe University
Mr Jinya Suzuki, Faculty of Economics, Kobe University
Mr Kai Nishii, Faculty of Human Development, Kobe University

Discussion:
Participants: Students of Kobe University, Vrije Universiteit Brussel
Closing:
Prof Yasuo Tanaka, Research Center for Urban Safety and Security, Kobe University

Having two facilitators from Brussels and Kobe, the workshop started with presentations from Kobe students who actually participated in the volunteer activities in Tohoku areas.
The first presentation made by Ms Yonemitsu in Kobe was about her volunteer activities in the affected areas. She joined a volunteer group that helped rake out mud from affected houses, took care of the Children's Day event and so on. Through this volunteer activity, she pointed out the difference between the Great Hanshin Earthquake and GEJET. While the damage in the former was caused by collapsed buildings, tsunami washed away buildings and people in the latter. She also learnt that people in the affected areas needed someone to talk to about their experience in order to sort out their feelings; and in this respect, volunteers like her were able to help. They had to however steady their own feelings so that they may listen carefully and understand their requests.
Ms Kinkawa participated in two volunteer events from Kobe University. Her presentation was mainly about her involvement in the footbath activities. She found through her experience of giving footbaths to the affected people that it provided thermal effect; relaxation of both body and mind; and a chance for the volunteer to assess the needs of the affected person through communication.
Ms Sato's activities included providing meals, helping preparation of bath, cleaning up muddy houses and dealing with reliefs such as clothes. Through those activities, she

found there was some mismatch of aid and needs, and thought that we need to think what are needed by people in the affected areas. Moreover, she wishes to point out two things: there should be good cooperation between local government, private sectors and volunteers; and volunteers are responsible to carry on their activities to the next level after completing their activities at the affected areas. They should not forget the disaster once they leave, for this could fill the gap between aid and needs.

Mr. Suzuki helped in the removal of dangerous items, home electrical appliance and so on from destroyed buildings and houses. Mr. Nishi visited the disaster stricken areas twice and compared the two experiences. He noticed a difference in the scenery. For example, in the earlier time, there was a lot of debris, but not so much in the latter. Another aspect was in the places the evacuees stay. In the earlier time, they lived in very small cubicles in schools or other shelters, but by the second time, the evacuees lived in temporary houses built especially for them. He also noticed that people expressed hope for the future in the latter.

In the Q & A session, a student in Brussels asked if there was any difficulty when communicating with people in the affected areas. A Kobe student found no difficulty in speaking to elderly or local people, but the problem was communication with the local government. Another student in Kobe pointed out that dialect was sometimes difficult for communication as well as local customs which were different. There were some other questions such as the essence of the footbath, the timing and period volunteers visited the affected areas and following-up activities after their return to Kobe. Question on the activities of listening to affected people was raised because those activities overwhelmed volunteers and it might have caused psychological stress. In answering to this question, Kobe students explained that they had some preparations beforehand by way of lectures and explanations. However, even doing so, they were shocked by what they saw in the affected areas and heard from the experiences of people who survived. Although they were not experts, they believed they can be of some help to the people affected by speaking to them. Another Kobe University student mentioned the important roles played by volunteers, individual people, whose view and suggestions would be of help to the government in making a better society.

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